

US Patent Application Serial No. 10/895,317
Amendment Dated 7/5/05
Reply to Office Action Dated 4/5/05

Remarks

Claims 1-32 are pending in the application and are presented for reconsideration. Claim 4 has been amended; and claims 1-3 and 5-32 remain in the application unchanged. No new matter has been added.

Claim Rejections

Claim 4 is objected to for informalities.

Claims 1-3, 5, 8, 9, 12-20, 29 and 30 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Stevens (U.S. Pat. No. 5,465,065).

Claims 6, 7, 21 and 22 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Stevens in view of Horowitz et al. ("The Art of Electronics", Cambridge University Press, 1980, pages 343-344).

Claims 4, 11, 24-28 and 32 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Stevens in view of Miura (U.S. Pat. No. 6,756,833).

Claims 23 and 31 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Stevens in view of Baumann (U.S. Pat. No. 5,744,992).

Claim 10 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claim.

The Examiner's rejections of the claims are respectfully traversed.

I. Response to Objection to Claim 4

Claim 4 is objected to because it does not have proper antecedent basis for "the second plurality of delay units". Claim 4 has been amended to depend from claim 11, which provides antecedent basis for "the second plurality of delay units". The objection to claim 4 is now overcome.

II. Rejections of Claims Under 35 U.S.C. § 103

1. Legal standard for Rejecting Claims Under 35 U.S.C. §103

The standard for obviousness under 35 U.S.C. §103 is whether the claimed invention would have been obvious to those skilled in the art in light of

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the knowledge made available by the reference or references. *In re Donovan and Ryan*, 184 USPQ 414, 420, n. 3 (CCPA 1975). It requires consideration of the entirety of the disclosures of the references. *In re Rinehart*, 189 USPQ 143, 146 (CCPA 1976). All limitations of the claims must be considered. *In re Boe*, 184 USPQ 38, 40 (CCPA 1974). In making a determination as to obviousness, the references must be read without benefit of Appellants' teachings. *In re Meng*, 181 USPQ 94, 97 (CCPA 1974). In addition, the propriety of a 35 U.S.C. §103 rejection is to be determined by whether the reference teachings appear to be sufficient for one of ordinary skill in the relevant art having the references before him to make the proposed substitution, combination, or other modifications. *In re Lintner*, 173 USPQ 560, 562 (CCPA 1972).

In order to combine references, the references must suggest the combination. *In re Bond*, 15 USPQ2d 1566, 1568 (CAFC 1990) ('Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination.") (quoting *Carella v. Starlight Archery and Pro Line* 231 USPQ 644, 647 (CAFC 1986)). The mere reference to common knowledge or common sense is insufficient to supply the motivation or suggestion to combine prior references to support an obviousness rejection. *In re Lee*, 27 F.3d 1338, 61 USPQ2d 1430 (Fed. Cir. 2002).

Our case law makes clear that the best defense against the hindsight-based obviousness analysis is the rigorous application of the requirement for a showing of a teaching or motivation to combine the prior art references. *In re Dembiczak*, 175 F.3D 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999). "Combining prior art references without evidence of such a suggestion, teaching, or motivation simply takes the inventor's disclosure as a blueprint for piecing together the prior art to defeat patentability - the essence of hindsight." *Id.*

When a rejection depends on a combination of prior art references, there must be some teaching, suggestion or motivation to combine the references. *In re Rouffet*, 149 F.3D 1350, 1355 47 USPQ2d 1453, 1456 (Fed. Cir. 1998) (citing *In re Geiger*, 815 F.2D 686, 688, 2 USPQ2D 1276, 1278 (Fed. Cir. 1987)).

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"As this court has stated, 'virtually all [inventions] are combinations of old elements.' Therefore, an examiner may often find every element of a claimed invention in the prior art. If identification of each claimed element in the prior art were sufficient to negate patentability, very few patents would ever issue. Furthermore, rejecting patents solely by finding prior art corollaries for the claimed elements would permit an examiner to use the claimed invention itself as a blueprint for piecing together elements in the prior art to defeat the patentability of the claimed invention. ... To counter this potential weakness in the obviousness construct, the suggestion to combine requirement stands as a critical safeguard against hindsight analysis and rote application of the legal test for obviousness. *In re Rouffet*, 149 F.3d 1350, 1357-58, 47 USPQ2d 1453, 1457 (Fed. Cir. 1998) (internal citations omitted)." *Yamanouchi Pharmaceutical Co. v. Danbury Pharmacal Inc.*, 56 USPQ2d 1641 (Fed. Cir., 2000).

"Most, if not all inventions arise from a combination of old elements. See *In re Rouffet*, 149 F.3d 1350, 1357 47 USPQ2d 1453, 1457 (Fed. Cir. 1998). Thus, every element of a claimed invention may often be found in the prior art. See *id.* However, identification in the prior art of each individual part claimed is insufficient to defeat patentability of the whole claimed invention. See *id.* Rather to establish obviousness based on a combination of the elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the applicant. See *In re Dance*, 160 F.3d 1339, 1343, 48 USPQ2d 1635, 1637 (Fed. Cir. 1998); *In re Gordon*, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984). Even when obviousness is based on a single prior art reference, there must be a showing of a suggestion or motivation to modify the teachings of that reference. See *B. F. Goodrich Co. v. Aircraft Breaking Sys. Corp.*, 72 F.3d 1577, 1582, 37 USPQ2d 1314, 1318 (Fed. Cir. 1996)." *In re Kotzab*, 55 USPQ2d 1313 (Fed. Cir., 2000).

An obviousness rejection is not appropriate if substantial reconstruction or redesign of the prior art references is necessary to arrive at the invention. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (C.C.P.A. 1959).

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2. Response to Rejections of Claims Under 35 U.S.C. § 103

a. Claims 1-11

Applicant's claim 1 recites:

A circuit for determining the propagation delay of an integrated circuit, comprising:

a first rank of logic memory elements, each logic memory element having a data input, a data output, and a clock input, the clock inputs being coupled together and configured to be driven by a clock signal;

a plurality of delay units coupled in series, each delay unit having an input and an output, the output of each delay unit configured to drive the data input of one of the logic memory elements; and

a logic inverter having an input configured to be driven by the clock signal, the inverter having an output configured to drive the input of the first delay unit of the plurality of delay units.

The Stevens Reference

The Examiner cites Stevens as teaching the essential elements of claim 1 except for "a logic inverter having an input configured to be driven by the clock signal, the inverter having an output configured to drive the input of the first delay unit of the plurality of delay units". The Examiner states, however, that "[s]ince Stevens discloses negative-edge-triggered flip-flops (94A-94E in Fig. 4), and since positive-edge-triggered flip-flops were common and well-known in the art as an equivalent means for capturing and storing data, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the circuit of Stevens by substituting the negative-edge-triggered flip-flops with positive-edge-triggered flip-flops as an equivalent alternative and including a logic inverter either before or after the preliminary delay unit to essentially obtain the same function and result".

However, there is no suggestion or motivation in the Stevens reference to make the proposed substitutions. First, there is nothing in the Stevens reference that suggests the use of an inverter circuit and propagation of a delay circuit using an inverted clock signal and positive-edge-triggered flip-flops. Second, the Stevens circuit is specifically designed using negative-edge-triggered flip-flops. The addition of the inverter and inverted clock signals would add elements to the

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Stevens circuit, thereby going against motivation for such a substitution. Accordingly, per *In re Dance, supra*, because the prior art is absent of any suggestion, teaching, or motivation to make the Examiner's proposed substitution in Stevens' circuit to reach the Applicant's invention, a rejection under 35 U.S.C. § 103(a) is improper.

In addition, the Examiner's proposed addition of a preliminary inverter circuit and substitution of positive-edge-triggered flip-flops for Steven's negative-edge-triggered flip-flops would add substantial redesign of Steven's circuit. Not only would it require the addition of the inverter circuit to provide an inverted input signal to the flip-flops, and the substitution of negative-edge-triggered flip-flops for Steven's negative-edge-triggered flip-flops, but it would require additional non-trivial changes to the implementation of the stages of the delay line shown in Stevens' FIG. 5 and in the operation of the preferred mode of the circuit within a serial data receiver as shown in Stevens' FIG. 7. Per *In re Ratti, supra*, an obviousness rejection is therefore not appropriate since substantial reconstruction or redesign of the Stevens reference is necessary to arrive at the invention.

None of the other references of record make up for the deficiencies of Stevens in meeting Applicant's claim 1. In view of the above, the Applicant respectfully requests the Examiner to withdraw the § 103 rejection of claim 1.

Claims 2-11 each depend from independent base claim 1 and add further limitations. For at least the same reasons that Claim 1 is not shown, taught, or disclosed by the cited references, Claims 2-11 are likewise not shown, taught, or disclosed. Thus, Applicant respectfully submits that the rejection of claims 2-11 should be withdrawn.

b. Claims 12-28

Claim 12 recites similar limitations to claim 1, including "means for logically inverting a clock signal, resulting in an inverted clock signal", "means for delaying the propagation of the *inverted* clock signal multiple times, resulting in a plurality of delayed *inverted* clock signals, with each delayed inverted clock signal being delayed a different amount", and "means for storing the logical state of

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each of the delayed *inverted* clock signals at each pulse of the clock signal, resulting in a stored logical state for each of the delayed *inverted* clock signals". For at least the same reasons that Claim 1 is not shown, taught, or disclosed by the cited references, Claim 12 is likewise not shown, taught, or disclosed. Thus, Applicant respectfully submits that the rejection of Claim 12 should be withdrawn.

Claims 13-28 each depend from independent base claim 12 and add further limitations. For at least the same reasons that Claim 12 is not shown, taught, or disclosed by the cited references, Claims 13-28 are likewise not shown, taught, or disclosed. Thus, Applicant respectfully submits that the rejection of claims 13-28 should be withdrawn.

c. Claims 29-32

Claim 29 recites similar limitations to claim 1, including "logically *inverting* a clock signal, resulting in an *inverted* clock signal", "delaying the propagation of the *inverted* clock signal multiple times, resulting in a plurality of delayed *inverted* clock signals, with each delayed *inverted* clock signal being delayed a different amount", and "storing the logical state of each of the delayed *inverted* clock signals at each pulse of the clock signal, resulting in a stored logical state for each of the delayed *inverted* clock signals". For at least the same reasons that Claim 1 is not shown, taught, or disclosed by the cited references, Claim 29 is likewise not shown, taught, or disclosed. Thus, Applicant respectfully submits that the rejection of Claim 29 should be withdrawn.

Claims 30-32 each depend from independent base claim 29 and add further limitations. For at least the same reasons that Claim 29 is not shown, taught, or disclosed by the cited references, Claims 30-32 are likewise not shown, taught, or disclosed. Thus, Applicant respectfully submits that the rejection of claims 30-32 should be withdrawn.

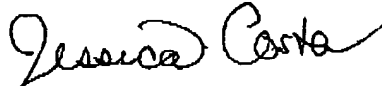
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Conclusion

In view of the foregoing remarks, it is respectfully submitted that none of the references cited by the Examiner taken alone or in any combination shows, teaches, or discloses the claimed invention, and that Claims 1-32 are in condition for allowance. Reexamination and reconsideration are respectfully requested.

Should the Examiner have any questions regarding this amendment, or should the Examiner believe that it would further prosecution of this application, the Examiner is invited to call the undersigned.

Respectfully submitted,



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